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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/382,929	08/25/1999	PAUL A. FARRAR	303.603US1	5871

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EXAMINER	
GRAYBILL, DAVID E	

ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/382,929	FARRAR, PAUL A.	
	Examiner	Art Unit	
	David E. Graybill	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8-10,12,14,15,18-23,31-36,38-46 and 75-94* is/are pending in the application.

4a) Of the above claim(s) *15,18-23,31-36,38-46 and 75-93* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-10,12,14 and 94* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1 page*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9-24-5 has been entered.

In the rejections infra, generally, reference labels are recited only for the first recitation of identical claim elements.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 8-10, 12, 14 and 94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun (6350672) and Murata (5268587).

At column 4, line 59, to column 7, line 44, Sun discloses the following:

An integrated circuit assembly comprising: an electronic substrate 60; and a conductive structure 66, 78 embedded in a material layer 68, 70 inherently having a plurality of vaporization temperatures, the material layer

is formed on the electronic substrate and the conductive structure includes a horizontal conductive interconnect 78 and at least one vertical wiring via 66 coupling the horizontal conductive interconnect to the electronic substrate, wherein the horizontal conductive interconnect is formed in and above a fill material 68; wherein at least one of the plurality of vaporization temperatures (that of 68) is about 400 degrees centigrade.

An integrated circuit assembly comprising: an electronic substrate; and a conductive structure 66 embedded in a plurality of materials 68, 70, each of the plurality of materials having a different vaporization temperature, the plurality of materials is formed on the electronic substrate and the conductive structure is coupled to the electronic substrate; wherein each of the plurality of materials contacts a surface of the electronic substrate; wherein at least one of the plurality of materials is silicon dioxide "silicon oxide"; wherein at least one of the plurality of materials is carbon.

An integrated circuit assembly comprising: an electronic substrate; and a conductive structure embedded in a material layer having a structural component 70 having a structural vaporization temperature and a fill material 68 having a vaporization temperature less than the structural vaporization temperature, the material layer is formed on the electronic substrate and the conductive structure is coupled to the electronic substrate, wherein the conductive structure includes a horizontal conductive

interconnect formed in and above the fill material and at least one vertical wiring via coupling the horizontal conductive interconnect to the electronic substrate; wherein the structural component is fabricated from silicon dioxide; wherein the fill material is fabricated from carbon.

To further clarify, Sun discloses that each of the plurality of materials contacts a surface of the electronic substrate because the materials and surface are a union of surfaces, and each of the materials is in at least physical association, relationship and connection with a surface of the electronic substrate.

However, Sun does not appear to explicitly disclose that the electronic substrate is a dynamic random access memory chip; wherein the conductive structure is fabricated from copper; wherein the electronic chip is a flip chip.

Nonetheless, at column 14, line 67 to column 15, line 5; and column 21, lines 1-6, Murata discloses that the electronic substrate 1 is a dynamic random access memory chip; wherein a conductive structure 57 is fabricated from copper; wherein the electronic chip is inherently a flip chip. Moreover, it would have been obvious to combine this disclosure of Murata with the disclosure of Sun because it would enable manufacture of a DRAM and reduce the migration phenomenon in the aluminum conductive structure of Sun.

Also, Murata inherently discloses a flip chip because the term "flip chip" merely limits the scope of the chip of Murata to the intended use of the chip and does not appear to result in a structural difference between the claimed chip and the chip of the applied prior art. Further, because the chip of Murata appears to have the same structure as the claimed chip, it appears to be inherently capable of being used for the intended use, and the intended use does not patentably distinguish the claimed chip from the chip of Murata. The manner in which a product operates is not germane to the issue of patentability of the product; Ex parte Wikdahl 10 USPQ 2d 1546, 1548 (BPAI 1989); Ex parte McCullough 7 USPQ 2d 1889, 1891 (BPAI 1988); In re Finsterwalder 168 USPQ 530 (CCPA 1971); In re Casey 152 USPQ 235, 238 (CCPA 1967). And, claims directed to product must be distinguished from the prior art in terms of structure rather than function. In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does [or is intended to do]." Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

Also, in the alternative, although Sun does not appear to verbatim disclose silicon dioxide, as cited, Sun discloses that the structural component is silicon oxide. In addition, at column 19, lines 39-41; column 20, lines 36-45; and column 32, line 67 to column 33, line 3, Murata disclose that silicon oxide 70 is silicon dioxide and further discloses silicon dioxide structural

components 36 and 54A. Furthermore, it would have been obvious to combine this disclosure of Murata with the disclosure of Sun because it would facilitate provision of the silicon oxide of Sun.

Claims 1-4, 6, 10 and 94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun (6350672) and Wu (5191404).

Sun is applied as it is applied to claims 1-4, 6, 10 and 94 supra.

However, Sun does not appear to explicitly disclose that the electronic substrate is a dynamic random access memory chip; wherein the electronic chip is a flip chip.

Still, at column 6, line 10-21; and column 7, lines 16 and 17, Wu discloses that an electronic substrate 24 is a dynamic random access memory chip "DRAM chip"; wherein the electronic chip is a "flip-chip."

Furthermore, it would have been obvious to combine this disclosure of Wu with the disclosure of Sun because it would facilitate provision of the electronic substrate of Sun, and enable manufacture of a DRAM and enable external electrical connection of the electronic substrate of Sun.

Also, Sun does not appear to explicitly disclose wherein a conductive structure is fabricated from copper.

Regardless, as cited, Sun discloses wherein a conductive structure is fabricated from aluminum. In addition, as cited, Wu discloses that aluminum and copper are alternatives and equivalents; therefore, it would

have been obvious to substitute or combine the copper of Wu for or with the aluminum of Sun. See In re May (CCPA) 136 USPQ 208 (It is our opinion that the substitution of Wille's type seal for the cement of Hallauer in Figure 1 would be obvious to persons of ordinary skill in the art from the disclosures of these references, merely involving an obvious selection between known alternatives in the art and the application of routine technical skills.); In re Cornish (CCPA) 125 USPQ 413; In re Soucy (CCPA) 153 USPQ 816; Sabel et al. v. The Wickes Corporation et al. (DC SC) 175 USPQ 3; Ex parte Seiko Koko Kabushiki Kaisha Co. (BdPatApp&Int) 225 USPQ 1260; and Ex parte Rachlin (BdPatApp&Int) 151 USPQ 56. See also Smith v. Hayashi, 209 USPQ 754 (Bd. of Pat. Inter. 1980) (However, there was evidence that both phthalocyanine and selenium were known photoconductors in the art of electrophotography. "This, in our view, presents strong evidence of obviousness in substituting one for the other in an electrophotographic environment as a photoconductor." 209 USPQ at 759.). An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows

logically from their having been individually taught in the prior art." In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) (citations omitted). See also In re Crockett, 279 F.2d 274, 126 USPQ 186 (CCPA 1960); Ex parte Quadranti, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

Claim 94 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sun and Murata as applied to claim 94 supra, and further in combination with Wu (5191404).

Sun and Murata do not appear to disclose verbatim that the electronic substrate is a flip chip.

Notwithstanding, as cited supra, Wu discloses that an electronic substrate 24 is a "flip-chip." Moreover, it would have been obvious to combine this disclosure of Wu with the disclosure of Sun and Murata because it would enable external electrical connection of the chip of Sun and Murata.

Applicant's amendment and remarks filed 9-14-5 have been fully considered, are addressed by the rejections supra, and are further addressed infra.

Applicant asserts, "the Office Action on page 9 admits that Sun fails to disclose a flip chip."

This assertion is respectfully deemed unpersuasive and traversed because applicant does not specifically cite or otherwise identify the alleged

assertion, and the Office Action does not admit that Sun fails to disclose a flip chip.

Relatedly, applicant argues that, "a flip chip is type [sic] of chip, not a statement of intended use."

This argument is respectively traversed and deemed unpersuasive because the rejection does not necessarily maintain the a flip chip is not a type of chip and is a statement of use.

Further, it is respectfully submitted that applicant's assumption that official notice is taken is incorrect because official notice is not taken.

For information on the status of this application applicant should check PAIR: Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alternatively, applicant may contact the File Information Unit at (703) 308-2733. Telephone status inquiries should not be directed to the examiner. See MPEP 1730VIC, MPEP 203.08 and MPEP 102.

Any other telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.
The fax phone number for group 2800 is (571) 273-8300.

David E. Graybill
Primary Examiner
Art Unit 2822

D.G.
19-Dec-05